

## IN THE CLAIMS

Claim amendments. Please amend claims 1-2, 5, 7-8, and 10, and withdraw claims 12-18, as follows:

1. **(CURRENTLY AMENDED)** A self-assembled lipid bilayer material comprising a plurality of lipid bilayer molecules in a stacked columnar structure ~~with self-limiting radial dimension mediated by chemical recognition events.~~
2. **(CURRENTLY AMENDED)** The self-assembled lipid bilayer material of Claim 1 wherein ~~the each~~ lipid bilayer molecules in a said stacked columnar structure ~~have~~ has a diameters in the range between approximately 600 Angstroms and approximately 900 Angstroms.
3. **(ORIGINAL)** The self-assembled lipid bilayer material of Claim 1 wherein the columnar structure is greater than approximately 300 Angstroms in length.
4. **(ORIGINAL)** The self-assembled lipid bilayer material of Claim 1 wherein the material is stable is aqueous solutions.
5. **(CURRENTLY AMENDED)** The self-assembled lipid bilayer material of Claim 1 wherein a ligand is ~~situated~~ intercalated between said lipid bilayer molecules, ~~said ligand promoting adhesion between said lipid bilayer molecules.~~
6. **(ORIGINAL)** The self-assembled lipid bilayer material of Claim 5 wherein said ligand has at least two bindings sites accessible from opposite sides of the ligand.
7. **(CURRENTLY AMENDED)** The self-assembled lipid bilayer material of Claim 4 5 wherein said ligand is a cation.
8. **(CURRENTLY AMENDED)** The self-assembled lipid bilayer material of Claim 4 5 wherein said ligand is a copper cation.
9. **(ORIGINAL)** The self-assembled lipid bilayer material of Claim 1 wherein said lipid bilayer molecules are functionalized with a receptor molecule.
10. **(CURRENTLY AMENDED)** The self-assembled lipid bilayer material of Claim 4 9 wherein said receptor molecule is iminodiacetic acid.

BEST AVAILABLE COPY

11. **(ORIGINAL)** The self-assembled lipid bilayer material of Claim 1 wherein molecules selected from proteins, polymers and metal oxides are intercalated between said lipid bilayer molecules.
12. **(Withdrawn)** A method for making a lipid bilayer material, comprising the steps of:
- functionalizing lipid bilayers with a receptor lipid;
  - preparing a lipid bilayer suspension of the functionalized lipid molecules mixed in a matrix lipid; and
  - adding a ligand specific for said receptor lipid to form a lipid bilayer material.
13. **(Withdrawn)** The method of Claim 12, wherein said receptor lipid has a headgroup functionality that binds to said ligand.
14. **(Withdrawn)** The method of Claim 12, wherein said receptor lipid has from 1 to 4 hydrophobic tails.
15. **(Withdrawn)** The method of Claim 12, wherein said receptor lipid self-assembles to form lamellar structures in an aqueous solution.
16. **(Withdrawn)** The method of Claim 13, wherein said ligand has a plurality of binding sites.
17. **(Withdrawn)** The method of Claim 12, wherein said lipid bilayer has a geometry selected from a closed spherical form and a flat disc.
18. **(Withdrawn)** A method of preparing a lipid bilayer material, comprising:
- dissolving distearylphosphatidylcholine in a solvent to yield a first solution;
  - dissolving 1-octadecyl-2-(9-(1-pyrene)nonyl)-rac-glycero-3-(8-(3,6-dioxy)octyl-1-amino-N,N-diacetic acid) in a solvent to yield a second solution;
  - mixing said first solution with said second solution;
  - removing solvent to form a homogenous lipid film;
  - adding a solution of morpholinepropanesulfonic acid to yield a third solution;
  - vortexing said third solution to form a suspension solution;
  - separating said suspension solution to yield a supernatant component; and
  - adding a solution of  $\text{CuCl}_2$  in a NaCl aqueous solution, wherein the resultant solution self-assembles to form a lipid bilayer material with a columnar structure.

## Certificate of Transmission

I certify that this paper is being transmitted by facsimile on this date to the United States Patent and Trademark Office as identified below:

Location: Group Art Unit 1775

Fax No: 703-872-9306

Date: Dec 2, 2004

Elmer A. Klavetter

Elmer A. Klavetter

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☒ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**